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IS 10013-1 (1981): water soluble type wood preservatives, Part 1: Acid-copper-chrome (ACC) preservative [CED 9: Timber and Timber Stores]

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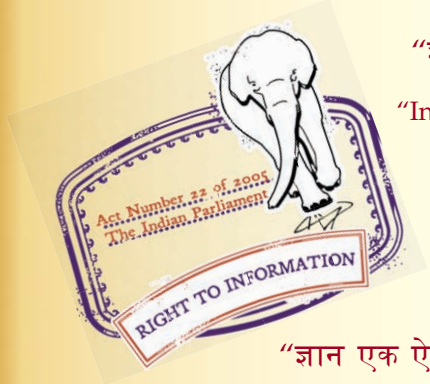

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Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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Indian Standard

SPECIFICATION FOR WATER SOLUBLE TYPE WOOD PRESERVATIVES

PART I ACID-COPPER-CHROME (ACC) PRESERVATIVE

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SPECIFICATION FOR WATER SOLUBLE TYPE WOOD PRESERVATIVES

PART I ACID-COPPER-CHROME (ACC) PRESERVATIVE

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Indian Standard

SPECIFICATION FOR WATER SOLUBLE TYPE WOOD PRESERVATIVES

PART I ACID-COPPER-CHROME (ACC) PRESERVATIVE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 December 1981, after the draft finalized by the Timber Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 With the rapid industrial development of the country, coupled with increased construction activity alround, the demand for timber for various purposes has greatly increased. In view of the limited availability of naturally durable species, such as teak (*Tectona grandis*) and sal (*Shorea robusta*), it is imperative that supplies of durable timbers are augmented by selected timbers of lesser durability which, when suitably treated, would give increased life under service conditions. Preservative treatment of timber, therefore, forms a very important part of the national effort to conserve the material resources of the country, and to achieve their most enconomic utilization.

0.3 IS : 401-1981* covers types of preservative, methods of treatment, and the type and choice of treatment for different species of timber for a number of uses. The standard also lists various oil type, organic solvent type, and water-soluble (leachable) and water-soluble (fixed) type preservatives. The efficiency of preservative treatment depends, besides the proper choice of preservative and the treatment process, on the quality of the preservative to ensure required absorption and penetration of the preservative. This standard has been formulated to lay down requirements of acid-copper-chrome (ACC) — a water-soluble (fixed) type of preservative.

0.4 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

*Code of practice for preservation of timber (*third revision*).

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified valuie in this standard.

1. SCOPE

1.1 This standard covers the requirements for acid-copper-chrome,-a water-soluble (fixed) type wood preservative specified for treatment of timber and other lignocellulosic materials as given in IS : 401-1981†.

1.2 This specification covers the composition of the preservative, quality of chemicals forming this composition, and sampling procedure for analysis.

1.3 The analysis procedures for different ingredients have been covered in IS : 2753 (Part I)-1964‡.

2. COMPOSITION AND PROPERTIES OF PRESERVATIVE

2.1 Acid-copper-chrome preservative formulation shall consist of the following active ingredients in nominal proportions by weight as shown below:

Chromic acetate/boric acid	$Cr(C_2H_3O_2)_3.H_3O$	5
Copper sulphate	$CuSO_4.5H_2O$	50
Sodium dichromate	$Na_2Cr_2O_7.2H_2O$	45
Or		
Potassium dichromate	$K_2Cr_2O_7$	

2.1.1 The percentage of any of the ingredients shall not be less than proportions shown below:

Chromic acetate/boric acid	$Cr(C_2H_3O_2)_3.H_2O$	4·75
Copper sulphate	$CuSO_4.5H_2O$	47·50
Sodium dichromate	$Na_2Cr_2O_7.2H_2O$	42·50
Or		
Potassium dichromate	$K_2Cr_2O_7$	

*Rules for rounding off numerical values (*revised*).

†Code of practice for preservation of timber (*third revision*).

‡Method for estimation of preservatives in treated timber and in treating solutions: Part I Determination of copper, arsenic, chromium, zinc, boron, creosote and fuel oil.

2.2 The preservative may be in a dry solid form, semi-liquid paste or solution.

2.3 *p*H Value — The *p*H value of solution ready for use shall not be lower than 2·7 nor higher than 4·2 when determined by means of a glass electrode at 15·5°C.

2.4 In case of dry solid, the preservative shall contain not less than 95 percent of the active ingredients mentioned under **2.1**.

2.4.1 In all cases the percentage of active ingredients, total active compounds and amount of moisture shall be labelled on the container as well as descriptive literature of the product.

2.5 Each of the chemicals used for such formulation shall be not less than of 95 percent purity.

3. SAMPLING

3.1 Samples shall be taken from requisite number of drums out of the supply made at one particular time as per sampling procedures laid down in IS : 4905-1968*.

3.2 In case of solution or paste, the same shall be thoroughly mixed with a rod and at least 1 kg sample shall be taken for chemical analysis from each drum.

3.3 In case of dry powder form, a true representative sample of the material, not less than one percent of the contents shall be taken for analysis.

3.4 At least 1 kg of the preservative shall be dissolved to obtain 15 percent solution of the preservative.

3.5 A small amount of the 15 percent solution may be drawn and diluted exactly to 5 percent for chemical analysis.

4. TESTING

4.1 The chemical analysis of the soultion with respect to its various ingredients shall be carried out according to the methods of estimation given in **3.4** of IS : 2753 (Part I)-1964†. The proportion of all chemicals shall comply with **2.1** and **2.1.1**.

*Methods for random sampling.

†Methods for estimation of preservatives in treated timber and in treating solutions: Part I Determination of copper, arsenic, chromium, zinc, boron, creosote and fuel oil.

5. MARKING

5.1 Each container shall be legibly marked with the following information:

a) Manufacturer's name or trade-mark, if any;

b) Date of manufacture; and

c) Percentage of dry active ingredients.

5.1.1 The container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2